DOCUMENT RESUME

ED 173 170 **SE 028 437**

TITLE	Statement on Spelling of Metre.
INSTITUTION	Metric Association, Inc., Boulder, Colo.
REPORT NO	USMA-Pub-15
PUB DATE	Dec 78
NOTE	33p.; Not available in hard copy due to small print throughout entire document
AVAILABLE FROM	U.S. Metric Association, Inc., Sugarloaf Star Route, Boulder, Colorado 80302 (1-9 copies $1.00 ea.; 10 or more copies $0.50 ea.)
EDRS PRICE	MF01 Plus Postage. PC Not Available from EDRS.
DESCRIPTORS	Elementary Secondary Education; *International Education; *Language Usage; *Mathematics Education; *Measurement; *Metric System; Postsecondary Education; *Spelling
IDENTIFIERS	*United States Metric Association

ABSTRACT

This report was prepared by the United States Metric Association (USMA) to present supportive evidence on the desirability of using the international English language spelling, metre, for the International System of Units (SI) unit of length, and litre for the common metric unit of volume. It contains a statement by the USMA, some background information and discussion about the controversy on SI metric English spelling, and a collection of letters, recommendations, and quotations related to the controversy. (MP)

****
* Reproductions supplied by EDRS are the best that can be made *
* from the original document. *
****

ED173170

U S DEPARTMENT OF HEALTH, EDUCATION & WELFARE
NATIONAL INSTITUTE OF EDUCATION

THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

"PERMISSION TO REPRODUCE THIS MATERIAL HAS BEEN GRANTED BY

Louis F. Sokol

TO THE EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)."

STATEMENT ON SPELLING OF METRE

December 1978

U.S. METRIC ASSOCIATION, Inc.
Sugarloaf Star Route
Boulder, Colorado 80302

SE 028 437

Statement on spelling of METRE and LITRE by the Metric Practice Committee of the U.S. Metric Association

and

a background report containing information and discussion about the controversy on SI metric English spelling

Prepared by the Metric Practice Committee

EVAN V. JOHNSTON, Chairman
Director, Northeast Metric Resource Center, Amherst, Massachusetts

VALERIE ANTOINE
Metric Planning Director, Senior Engineer, Litton Guidance and Control Systems, Woodland Hills, California

ROBERT H. BUSHNELL, P.E.
Meteorologist and Consulting Engineer, Boulder, Colorado

ANDRE NADASH
Consulting Engineer, Deltona, Florida

LOUIS F. SOKOL
Metrication Consultant, Boulder, Colorado

JACK L. WILSON, P.E.
Chairman, California Metric Committee, Livermore, California

CONTENTS

Resolution	1
Introduction	2
Background	2
Rebuttal	6
Additional Comments	8
Appendixes	11

USMA Publication 15

Copyright 1978

RESOLUTION

Resolution on spelling of metre and litre by the Metric Practice Committee of the U.S. Metric Association:

Noting that all English speaking users of SI metric units except some who live in the United States use or intend to use the spelling "metre" rather than "meter" and "litre" rather than "liter", we recommend that the units always be spelled "metre" and "litre". Such spelling follows the recommendations of the International Bureau of Weights and Measures (BIPM).

There is no rule of law in the United States requiring either spelling. Notices in the Federal Register about metric usage are binding only on the agency issuing the notice. Those who wish to follow SI are free to do so in spite of differences with the usage of any government agency or private body.

The Metric Conversion Act of 1975 (P.L. 94-168) calls for voluntary conversion to the use of SI as "interpreted or modified for the United States by the Secretary of Commerce". We recommend that the Secretary take the option of making no such interpretations or modifications. We recommend that the SI be used as defined by international agreement and be used according to BIPM recommendations.

We commend the following report to your attention.

1978 October 16

Metric Practice Committee
U.S. Metric Association, Inc.

Background report for the resolution on spelling of METRE and LITRE by Louis F. Sokol, President, USMA, for the USMA Metric Practice Committee

INTRODUCTION

This report was prepared to present supportive evidence on the desirability of using the international English language spelling, metre, for the SI unit of length, and litre for the common metric unit of volume. The report was written for the Metric Practice Committee of the USMA as a public service in the interest of metrication progress and international goodwill. We are better off if we use metric units everywhere. The world is easier to live in if we all use SI metric units. A corollary to that is that we are all better off if we could have the same spelling of SI metric units everywhere.

One of the major impediments to a successful national metrication program appears to be the inability of certain influential persons to accept the use of the International System of Units (SI) in its internationally recognized English language form. Specifically, these persons are unwilling to accept the fact that, since two of the three most commonly used metric units (metre, litre, gram) are officially spelled metre-litre in all of the English speaking world (more than 40 countries) with the exception of the United States, it is important that the USA also standardize on the metre-litre spellings.

Every progressive step is opposed by some, and the metre-litre spelling move is no exception. The American National Metric Council (ANMC) has done many worthwhile things for metrication, but the decision at its founding to conduct a "survey" on the spelling of metre-litre has been a disservice to the cause of metrication.

Based on the results of the ANMC "spelling survey", the Assistant Secretary of Commerce for Science and Technology in 1975 reversed the 1971 National Bureau of Standards (NBS) recommendation for use of the metre-litre spellings and required all Department of Commerce personnel to use only the -er spellings of metre-litre, and attempted to extend this action to all government departments through the medium of a Federal Register notice (1976-12-10, page 54018). There is a strong implication of extention to the public of the Federal Register notice. People read the Federal Register notice by the Department of Commerce on "The Metric System of Measurement" and assume that, if they are to use metric units, they must use them as given in that notice. However, this is not the case. Rules applicable to the public are required to have a public hearing before issue. This notice was not exposed to public comment. Why? Because there is no basis for legal rules of public usage of metric units. Accordingly, public comment was not required. Further, of course, there are no legal rules for metric usage. You are not required to follow the rules in the notice (unless you work for the Department of Commerce).

BACKGROUND

The use of the metre-litre spellings was first introduced by NBS in 1971, but general acceptance has been retarded by well-planned actions of a few persons who have prevailed through the medium of the ANMC upon publishers, government officials, and other opinion makers that the metre-litre spellings are British, thus foreign, and not linguistically acceptable.

The USA is implementing the SI as its primary measurement language. All other major nations of the world are officially using or implementing the use of SI metric units in their economies. The changeover to the new measurement language in the USA is being led by industry which finds it increasingly necessary to use SI metric units in order to compete in a metric world.

The SI was introduced in 1960 by the General Conference on Weights and Measures (CGPM) to which presently 47 nations are signatories. The CGPM was organized following the signing of the "Convention of the Metre" (and not the Convention of the Meter) in 1875 by 17 nations including the United States. The intent of the CGPM is that all nations use the SI as defined and recommended by them, thus one standard measurement system would hopefully be used by all nations. The CGPM which meets once every several years has as its administrative body the International Bureau of Weights and Measures (BIPM) based in Sèvres, France.

Since the official language of the CGPM is French, the SI is officially printed in French in a document titled, "Le Système International d'Unités." In 1971 the NBS issued an official English translation of the original French text called, The International System of Units (SI), NBS SP 330. The document was prepared jointly by the National Physical Laboratory (NPL), United Kingdom, and NBS, USA. The editors were Dr. Chester H. Page of NBS and Dr. Paul Vigoureux of NPL. Independent versions of the English translation were printed by NBS and NPL with the only difference being the spelling of "caesium", "black body", and "deca" in the UK publication and "cesium", blackbody", and "deka" in the USA publication. A translator's note stated: "The spellings 'metre' and 'kilogram' are used in this USA/UK translation in the hope of securing worldwide uniformity in the English spelling of the names of the units of the International System." According to a "gentlemen's agreement", the USA would encourage use of the metre-litre spellings while Britain would encourage the spelling kilogram instead of kilogramme.

The publication of practically similar documents was a noble attemp by Dr. Page and Dr. Vigoureux to achieve international uniformity and standardization of the SI in the widely used English language. Dr. Jean Terrien, director of the BIPM, had hoped that wide dissemination of the joint document would promote knowledge and understanding of the SI and encourage its use in all realms of science, industry, and commerce, and secure uniformity of nomenclature throughout the English speaking world. (See his statement in Appendix N)

The director of NBS at the time SP 330 was originally published was Dr. Lewis Branscomb. He and his successor, Dr. Richard Roberts, supported the move to use the metre-litre spellings as a progressive step contributing to international cooperation and understanding. Acceptance of the metre-litre spellings by knowledgeable users of the SI following their introduction in 1971 was rapid. (See Appendixes F, M)

Shortly after NBS SP 330 was published, its use of the metre-litre spellings was vigorously attacked by Dr. Bruce Barrow of the Institute of Electrical and Electronics Engineers' Standards Committee; Dr. John Howard, editor of Applied Optics; and Albert Mettler, secretary of the Canadian Metric Association. They began a coordinated propaganda campaign to force NBS to retreat from its position of supporting the international English language spellings of the metric units, metre-litre. Dr. Howard wrote many editorials attacking the new NBS spelling policy. Mr. Mettler wrote profusely about the "virtues" of the -er spelling of metre-litre and distributed these to hundreds of U.S. citizens in the name of the Canadian Metric Association.

In the fall of 1973 the American National Standards Institute (ANSI) created the American National Metric Council, and officials of ANSI selected the original ANMC staff as well as the members of its five main committees and the Board of Directors. One of the committees was called the Metric Practice Committee, and among its eight members was Dr. Barrow. Immediately, he took the opportunity this

offered him to pursue eliminating the use of the newly introduced metre-litre spellings in the USA. His first action was to convince the chairman of the ANMC Metric Practice Committee that his viewpoint should be supported. Under Dr. Barrow's guidance the newly appointed committee immediately set up a "task force on spelling and pronunciation" which he chaired. This was followed early in 1974 by a "survey" or "poll" on the spelling of metre-litre. The poll questions were sent to persons and organizations who were already using some metric units but not necessarily SI units.

This particular survey had certain aspects which made it impossible to support the metre-litre spellings in any fairness, because of the bias of the material sent to those participating in the "survey". The "poll" takers banked on the fact that those surveyed knew little about the reasons for standardizing metric unit spelling among English speaking nations, and they counted on the human characteristic to resist change. Obviously, the outcome of the "survey" was no surprise; 75 % of those polled favored the meter-liter spellings.

Taking a poll on requiring people to do something they know little about will inevitably result in a rejection. A poll would have to be conducted among knowledgeable people. The details of the spelling of metre-litre were not well known. While many of those polled had been using some metric units, most had not been using the metre-litre spellings. Changes in custom cannot be brought about through surveys or polls.

The next step by the ANMC Metric Practice Committee was to persuade the ANMC Board of Directors to change its editorial policy to use of the meter-liter spellings instead of the internationally recommended metre-litre spellings they had been using. The following appears in the 1975 March 20 ANMC Board meeting minutes: "Mr. Hastings offered a number of motions which were debated and then withdrawn for various reasons. The sense of the Board was that ANMC should use the spellings 'meter' and 'liter' in all its publications but should recognize the widespread use of the spellings 'metre' and 'litre' and should not try to dictate to others on preferred spelling."

The motion which was finally approved is: "It shall be the policy of the ANMC to use the spellings 'meter' and 'liter' in all its publications. However, the ANMC recognizes the widespread use of the spellings 'metre' and 'litre', and will accept them in letters or other documents submitted to it for publication when the name of the author, or sponsoring group is to be published."

Soon after this action a publication was issued by ANMC which is called Metric Conversion Paper 8, ANMC Adopts Meter and Liter Spelling (MCP 8) which supposedly presents the case for both the -er and -re forms of spelling metre and litre but which is cleverly edited to favor the -er spelling position. Discussion of the statements in MCP 8 are made in the "rebuttal" section below.

The ANMC Board never established a policy of telling other users of SI that the spelling should be -er. Nevertheless, several members of the ANMC Board and the ANMC Metric Practice Committee began an intensive lobbying effort to sway opinion against the use of -re. They used the Board action quoted above to justify this. The U.S. Metric Association assumes that the ANMC intends to stand by its bylaws, which state that ANMC is "nonadvocative" (Sec. 1.01, Par. 6). Therefore it follows that ANMC also goes on record as not advocating spelling, usage rules, or anything else concerned with metrication.

In 1975, Assistant Secretary of Commerce Betsy Ancker-Johnson influenced by the vociferous "-er" advocates, issued a directive that all Department of Commerce employees must use only the "-er" spellings

for metre-litre. This was in contradiction to the Federal Register notice on the SI of 1975-06-01 (See Appendix E). She cited as the reason for her action the fact that the GPO Style Manual spelled it that way. However, she did not indicate that because the Manual lists such archaic metric units as myriagram and uses other non-SI terms the Department of Commerce should also accept those incorrect terms as correct usage. In addition, she did not bother to check page 64 of the GPO Style Manual to find spelling of a word two different ways when there are two meanings for the word:

timber (wood) timbre (tone)

In 1975 July Mrs. Ancker-Johnson also stopped the printing of the large NBS Wall Chart on the SI, NBS SP 304, with its metre-litre spellings. At considerable public expense, the chart was revised and reprinted using the -er spellings. In 1976 April while attending a meeting of the Metrication Subcommittee of the Interagency Committee on Standards Policy she successfully exhorted the members to opt for the -er spelling of metre-litre. At that meeting all committee members were given a copy of ANMC's MCP 8 with its distorted views favoring the -er spellings. The last official action of Mrs. Ancker-Johnson relative to the SI was to issue a Federal Register notice on 1976-12-10 which used only the -er spelling, reversing the former Federal Register notice by Dr. Roberts which recommended the metre-litre spellings but gave the -er form as optional usage. (See Appendix E)

Her successor, Jordan Baruch, has followed her retrogressive actions on spelling. In a letter to Congressman Olin Teague which appeared in the Congressional Record for 1977 June 10, Dr. Baruch wrote, "It is my conclusion after the above review that the traditional spelling of meter in the United States for over 100 years has been with the "er" ending and that this spelling is preferable for United States usage. Accordingly, it is the view of the Department of Commerce that all Government agencies should follow the rule of using the 'meter' spelling. It is our expectation that any exceptions to the rule of using the 'meter' spelling will be limited to those situations where it is appropriate in international relationships. It is also our view that the private sector should be encouraged to adopt the same rule followed by Gorvernment agencies so that the 'meter' spelling will become the accepted usage in the United States." He is also responsible for the modified translation of the SI in the 1977 edition of NBS SP 330, which carefully avoids mentioning that the three preceding editions of that publication used the international English language spellings, metre-litre.

During 1976 the chairman of the ANMC Metric Practice Committee sat in as technical advisor for the Educational Materials Sector Committee of ANMC which was preparing a booklet, Metric Guide for Educational Materials. Of the 24 members of that committee, 22 were publishers' representatives while two were (supervisory) educators. There was not one practicing teacher on the entire committee. One can only imagine the bias of the technical advice on the spelling issue. Additionally, all were handed copies of ANMC MCP 8. After such indoctrination, it was no surprise that the committee voted 8-4 for the -er spelling of metre-litre. When one of the committee members called attention to the fact that the excellent Canadian educational publication, The Metric Guide, used the -re spellings, the chairman of the ANMC Metric Practice Committee responded, "so what, they are 22 million against our more than 200 million." The committee even followed their technical advisor's recommendation verbatim which states, "The Educational Materials Sector Committee recommends the spellings 'meter' and 'liter' for publications with a copyright date of 1982 or later. Prior to 1982 the spellings 'meter' and 'metre' or 'liter' and 'litre', are equally acceptable." The committee

completely disregarded the recommendations for the -re spellings in the Final Report of the Interstate Consortium on Metric Education which was funded by the U.S. Office of Education and in which 27 states and territories participated. (See Appendix O)

The attack on the use of the international English language spellings, metre-litre, is political and sociological; an attempt by determined individuals to thwart progress in the use of the SI in its accepted English language form. (See Appendixes A, B) Were it not for their regressive reaction to the new spellings, the metre-litre spellings by now would have been firmly established in USA usage of the SI.

The Metric Conversion Act of 1975, P.L. 94-168, contains the wording: "'metric system of measurement' means the International System of Units as established by the General Conference of Weights and Measures in 1960 and interpreted or modified for the United States by the Secretary of Commerce." The wording "interpreted or modified --- by the Secretary of Commerce" was inserted in the original metric bill on the recommendation of a NBS official. Such wording permits a political appointee either capriciously or through ignorance to change spelling, symbols, and so forth. It could mean a change of rules each time we have a new Secretary of Commerce.

The USMA does not agree that the SI as modified by the Secretary of Commerce is "proper use of SI." The only "proper" use of SI is that set by the CGPM in Le Système International d'Unités. The USMA also does not agree that the U.S. government should dictate spelling of words to its citizens. The USMA believes the Federal Register notice on the SI should recognize both forms of spelling as did the 1975-06-01 notice signed by NBS director Dr. Roberts. (See Appendix E)

REBUTTAL to ANMC MCP 8

1. Guide using -er spelling given to questioners

The ANMC spelling question documents included a copy of the ANMC Metric Editorial Guide which specifies the -er spellings and contains the statement, "The British spellings are metre and litre. Some U.S. technical groups have recently adopted these spellings in the hope that there may be worldwide agreement on the spelling of these words in the English language."

The issuance of the ANMC Metric Editorial Guide to the participants of the "spelling survey" prejudged the "survey", since no doubt many people were influenced by its use of the -er spellings. In addition, the fact that a majority of the ANMC Metric Practice Committee voted for the -er spelling as reported in the Guide influenced many respondents to vote for -er. Referring to metre-litre spellings as British spellings implied that they are not suitable for use in the United States. As a matter of fact, metre-litre are French spellings which most English speaking nations have adopted for use with SI.

2. More coverage given the -er case

There are 13 pages devoted to the -er case compared to only 3 pages for the -re case in ANMC MCP 8. Some "survey" participants must have been influenced by the greater amount of material for the -er case.

3. Relevance of phonetics

Most of the ANMC case for the -er spellings was devoted to phonetics and linguistics supported by statements from four linguists, plus the statement "that it is the way we have been spelling it for more than a hundred years". To my knowledge, the questions put to the linguists were never revealed, so I can not evaluate their opinions.

According to Dr. Allan Taylor, chairman of the Linguistics Department of the University of Colorado, "The spellings metre-litre

and meter-liter are equally servicable from the phonetic point of view. (See Appendix A) Dr. Taylor was given a copy of ANMC MCP 8 and asked to state his opinion on the phonetic and linguistics aspects of both forms of spellings. Dr. Taylor's views are supported in their entirety by Dr. Morris Halle of the Department of Linguistics and Philosophy of the Massachusetts Institute of Technology, who is considered to be the leading linguist in the United States. (See Appendix B)

Quoting linguists in the manner that ANMC MCP 8 did, violated one of the principal ethics of a linguist which is, "a linguist does not prescribe a language, he describes it." Probably the four linguists who were quoted in MCP 8 were never fully apprised of the ramifications of the issue but were asked only specific questions.

It is specious to talk about phonetics and orthography when the English language has more than 170 pairs or trios of homophones, words that are pronounced the same but spelled differently to connote difference in meanings. (See Appendix C) So why just pick on metre and litre? We might note that using our rules of pronunciation, liter would be pronounced like "lighter" (diner-dinner, planer-planner).

The "we used the meter spelling for 100 years" is twisting a fact, as we have not measured with the metre in the USA to any extent. Our citizens' use of "meter" usually refers to the water or gas meter on which their utility bills are based...or the meter in poetry.

4. The BIPM does not prescribe spelling

The most often quoted statement to support the continued use of the -er spelling of metre-litre in MCP 8 is that "the BIPM does not prescribe the spelling of units." This is partially true due to the existence of many languages with different spelling rules; however, Dr. Jean Terrien, director of the BIPM, has stated he would like to see spelling consistency within a single language block. According to Dr. Terrien, "...the BIPM wishes that in all English language countries uniformity should be achieved on the ending 're',..." (See Appendix N) Historic usage in the USA has generally been meter-liter which also is the official German language spelling. Nevertheless, a precedent was set in the "Mendenhall Order" in 1893 which uses the "metre" spelling when it defines the yard and pound as specific ratios of the platinum-iridium metre bar and the prototype kilogram mass. (See Appendix Q)

5. Language breakdown not correct

The language breakdown on page 25 of ANMC MCP 8 was taken directly from the writings of Albert Metzler without having been checked. He lists the USA in the -er group whereas in reality both the -er and -re forms of metre-litre are presently used. Furthermore, how can one list a country if that is the one for which a determination is being made? He lists Indonesia in the -er group (Dutch) but fails to include India along with 40 other English using nations in the -re group. In his French speaking group he fails to list many millions of persons from other French speaking countries. (See Appendix L)

The ANMC MCP 8 further promulgates an inaccuracy when it states that the English speaking nations using the metre-litre spellings are "outnumbered 2 to 1 by the speakers of American English" when in fact speakers of "American English" are outnumbered 2 to 1 by the other English speaking nations on a population basis.

The -er advocates never mentioned that the English language has international usage beyond that represented by population figures alone, since English is the international language of civil and maritime navagation, banking, and commerce. English and French are the working languages of ISO, IEC, UN, EC, and many other world organizations; and

invariably most of them use the metre-litre spellings. No non-English language which uses the meter-liter spellings is used by the major world organizations listed above. Most smaller nations use ISO and IEC standards in their English or French language versions as do Italy, Denmark, and the Netherlands, so they are familiar with the metre-litre spellings.

The choice from a strictly international viewpoint could be between "tr" and "t-vowel" rather than between "er" and "re". United States English should be left out in the initial comparison if the decision is being made which way the USA should go. Excluding the USA there are about 8.3 times as many persons which use the "tr" spellings compared to the "t-vowel" spellings, and even if the USA is included in the "t-vowel" group the ratio of the "tr" to "t-vowel" users is still 3.6 to 1. Conceivably in the future if a single world spelling of metre-litre is to be achieved, the metro-metr users could change to metre-litre with less of a phonetic disruption than adopting the meter-liter spellings. The present Germanic language users of -er could adapt to the use of metre-litre also.

ADDITIONAL COMMENTS

1. Concern of publishers

The -er advocates did not concern themselves with the problem of publishers who would be forced to have two editions -- one for domestic use and one for export if the -er spellings would have to be used in the USA. The use of metre-litre spellings in educational and technical books increases their chance of acceptance in all other English speaking countries and thus enhances their export potential. It is true that several of the major publishers have Canadian subsidiaries who can print -re versions for export, but the majority of publishers do not have such flexibility. (See Appendix I)

2. Chauvinistic attitude

The ANMC MCP 8 devotes several pages to justifying the use of -er endings over -re endings in "American English". They mentioned not a word about the fact that there has never been any public outcry about the wide use of theatre or the following proper names: Rockville Centre, NY; Centre County, PA; Newton Centre, MA, or Centre, AL. The argument that United States citizens will not accept the metre-litre spellings is baseless.

The instigators of the ANMC "spelling survey" constantly compare "American spelling" as opposed to "British spelling", but not once did they refer to "international English language spelling". We should be adopting an international measurement system and not an "American" system. Furthermore, "American spelling" should really be "United States spelling"; since all residents of North America and South America consider themselves Americans.

There is no question that the intent of some of the members of the ANMC Metric Practice Committee is to impose their will on the English speaking world. Quoting from page 28 of ANMC MCP 8, "...In questions of language it has been said that nothing is so harmful as an error made by a great man. We believe that an acknowledgement by the NBS that the -er spelling will be better for the United States than the -re would quickly bring us back to a single -er spelling -- and perhaps eventually for the rest of the English-speaking world, too, for the reasons explained by our linguist consultants." Other English speaking nations which outnumber the United States 2 to 1 on a population basis resent this type of attitude which only serves to fuel the "ugly American" image. There is no intent on the part of any of the other 40 or more English speaking nations to change their spellings of metre and litre..

3. Disregard for language clarity

The -er advocates ignore the fact that English language clarity is improved when the spelling, metre, is used for the SI unit of length, while meter is used for an instrument or device. Many organizations and companies find this distinction highly desirable, especially when a plethora of meters is used by modern industry. Among these are the National Conference of Weights and Measures, the American Gas Association, The American Petroleum Institute, The American Water Works Association, the Aerospace Industries Association, Pitney-Bowes, and General Motors.

There is a similarity between liter and litter to many persons. This confusion is reduced if litre is used. This should be of special concern to persons in the beverage industries where the word, litter, is very much on their minds. (See Appendix D)

4. Quotations

Quote from Pitney Bowes' Metric Drawing Practice:
"-- THINK: metre, with an 're' ending, NOT meter.
Note: Metre is the SI base unit of length. The word 'meter' means a measuring device. Metre and meter sound alike."

Quote from B.M. Oliver, vice president of Hewlett-Packard:
"The spelling l - i - t - e - r is not phonetic, since the long sound of i is implied. Thus litre is as acceptable as acre."

Quote from ASME Orientation and Guide for Use of SI (Metric) Units, Fifth Edition (American Society of Mechanical Engineers) page 3:
" **Metre -- This is the correct spelling for the unit of length and is established in NBS Special Publication 330, p.2."

Quote from Valerie Antoine, Metric Planning Director, Litton Guidance and Control Systems:
"The size of the metre is constant; the size of the meter can vary.
Obscure: There is a meter between the two meters.
Clear: There is a metre between the two meters."

Quote from James Morgan, Director of Technical Services, National Fluid Power Association.
"ANMC should not ask American people how to spell metre. They should ask the other nations. We have to start communicating with people outside the U.S."

5. Historical note

The metric system originated in France during the last decade of the 18th Century, and the names given to two of the units were metre and litre. The use of the metre-litre spellings in the English language pays tribute to the founders of the metric system.

6. Definitions

The following two words have only one specific meaning:

metre -- The SI base unit of length (noun)

litre -- The common metric unit for volume which is the same as a cubic decimetre (noun)

The following two words have multiple meanings:

meter -- Systematically arranged and measured rhythm in verse (noun)

An instrument or device for measuring and sometimes recording the amount of specific information (noun)

A philatelic impression which is used in lieu of a postage stamp (noun)

A printed teletype message (noun)

To supply in a measured or regulated amount (verb)

In German the SI base unit of length (noun)

liter -- As used by some advertisers, a device which contains a flammable liquid and used mainly to produce a flame to light tobacco smoking materials (noun)

In German the common metric unit of volume

It should be pointed out that the use of meter and liter in the German language does not result in multiple meanings or ambiguities as it does in the English language, since meter is not an instrument or device, and litter does not exist as a German word.

micrometer	an instrument for taking fine length measurements
micrometre	an SI submultiple unit of length equal to 0.000 001 metre
ohmmeter	an instrument for measuring electric resistance
ohm metre	SI derived unit for resistivity
coulomb meter	instrument for measuring quantity of electricity
coulomb metre	SI derived unit for electric dipole moment
newton meter	an instrument for measuring force
newton metre	SI derived unit for momemt of force

APPENDIXES

Letter on linguistics -- Dr. Allan R. Taylor	A
Letter on linguistics -- Dr. Morris Halle	B
English language homophones	C
2 LITTER beverage bottles (advertisement and letter)	D
FEDERAL REGISTER notice, 1975 June 1	E
Federal Highway Administration notice	F
Letter in GAS DIGEST by J. L. Hamlin	G
Letter in METRIC BULLETIN by J. L. Wilson	H
Letter to Secretary of Commerce by W. G. Ohaus	I
Article from Kenworth Truck publication	J
National Society of Professional Engineers resolution	K
Spelling usage by countries	L
General Motors spelling policy	M
Comments on spelling by Dr. J. Terrien, director, BIPM	N
Recommendation by Interstate Consortium on Metric Education	O
Letter from R. H. Braunlich, FMC Corporation	P
Quotation from Mendenhall Order	Q
Quotation from National Science Foundation publication	R

UNIVERSITY OF COLORADO
BOULDER, COLORADO 80302, USA

DEPARTMENT OF LINGUISTICS

February 21, 1978

Mr. Louis F. Sokol
U.S. Metric Association, Inc.
Sugarloaf Star Route
Boulder, Colorado 80302

Dear Mr. Sokol:

This is a response to your telephone call to me regarding spellings of metric terminology, in particular those for the basic distance and liquid measure words.

The spellings metre-litre and meter-liter are equally serviceable from the phonetic point of view. (By "phonetic point of view" I refer to the amount of phonetic information which the spellings convey; to be sure, spellings in many languages convey little or no phonetic information, for example, Chinese, and there is no real need that they do. It is possible to be quite literate without information on pronunciation being part of the system.) In both cases, the phonetic form of the word has two syllables, the second consisting of a "syllabic r," that is, an r which has vocalic function. A broad phonetic rendering of these words would be [míytṛ] and [líytṛ]. In both cases the spelling with -er or -re reflects tradition and history, nothing more. Although in the distant past these two spellings may have reflected different phonetics, they certainly no longer do.

The problem you raise is basically political and sociological, and I find it very annoying that it is perceived as linguistic. A great many spellings in English, French, and numerous other languages, is dictated by convention, often quite arbitrary in origin. Because conventions have become established there is good cause for following them, but it is silly to argue that they reflect anything more than convention. Where conventions (or traditions) come into competition, choices between them obviously have to be made on some kind of basis, and usually these turn out to be pragmatic--which they should.

In the particular case I can see arguments for and against both spellings, but I see the question as trivial in any event. No one will be inconvenienced to any great extent if both spellings are used, and no one will be particularly benefited if one is chosen over the other. The spellings differ so little that any literate person will recognize both.

American and British usage do differ in many ways--we do speak (and write) different dialects of the same language. Agreement on this tiny corner of the lexicon will have no impact at all on all of the other differences which will continue to exist. Both communities need to recognize this, and stop viewing each other as intransigent or stuffy because different spelling habits have become ingrained. There are far more important things to worry about.

In closing, I would say that linguists (who also happen to be human beings with prejudices and emotions) should enter such matters with caution, being careful to keep their professional opinions clearly separate from their other opinions. We should express ourselves on descriptive matters in an objective and scientific way. On political and social matters I presume that we can be as bigoted as anyone else. In matters where prescription is attempted I would hope that we will be scientific also, which is what I have attempted to be here.

The fact remains that there is no way to motivate a choice between these spellings on linguistic grounds. Both spellings are phonetically adequate. If phonetics are to be ignored in the spelling of English, as often is the case, then the sky is the limit. Any combination of letters which are accepted as rendering [míytr] and [líytr] would do as well. Which is another way of saying that a rose by any other name would smell as sweet.

I wish you luck in your efforts to reconcile the opposing camps in this vexed (and vexing) question.

Sincerely yours,

Allan R. Taylor

Allan R. Taylor
Professor of Linguistics and
Chairman

ART:gwh

Editorial note:

Professor Taylor sent the above letter in response to a request to comment on the phonetic-orthographic aspects of the metre-litre and meter-liter forms of spelling. He was given a copy of ANMC Metric Conversion Paper 8 with its comments on the issue by four other linguists.

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

DEPARTMENT OF LINGUISTICS AND PHILOSOPHY

CAMBRIDGE, MASSACHUSETTS 02139

August 8, 1978

Dear Mr. Sokol,

This will acknowledge receipt of your letter of July 28 and enclosed materials. After reading Professor Taylor's excellent letter to you I find I have nothing to add that would be of great use. He put the matter as fairly and as clearly as anyone can. To attempt to add to his comments would increase the number of words pronounced in this matter without increasing any one's understanding of the issues.

Sincerely

Morris Halle

Editorial note:
The above letter by Dr. Morris Halle, who is considered by his peers to be dean of United States linguists, gives full credence to Prof. Taylor's letter on the spelling issue. In addition to Prof. Taylor's letter, Dr. Halle was sent a copy of ANSC Metric Conversion Paper 8.

ENGLISH LANGUAGE HOMOPHONES

affront, afront
air, heir
all, awl
already, all ready
altar, alter
altogether, all together
ate, eight
attendance, attendants
bail, bale
ball, bawl
bare, bear
be, bee
beau, bow
beat, beet
been, bin
berry, bury
berth, birth
blew, blue
billed, build
boar, bore
board, bored
boarder, border
born, borne
bole, boll, bowl
bough, bow
brake, break
bread, bred
breadth, breath
brewed, brood
bridal, bridle
by, buy
carat, carot, carrot
ceiling, sealing
cent, scent, sent
cents, scents, sense
chord, cord
cite, sight, site
coarse, course
core, corps
council, counsel
creak, creek
crews, cruise
dam, damn
days, daze
dear, deer
dense, dents
dependence, dependents
die, dye
dual, duel
due, do
faint, feint
fair, fare
faze, phase
feat, feet
fir, fur
flair, flare
flea, flee
flew, flue
flour, flower
for, fore, four
forbear, forebear
foreward, forward
forth, fourth
foul, fowl
gage, gauge
gate, gait
gild, guild
gilt, guilt
hair, hare
hart, heart
heal, heel
hear, here
hire, higher
hoard, horde
hoes, hose
hole, whole
holy, wholly
hour, our
I, eye
idle, idol
in, inn
incidence, incidents
its, it's
jam, jamb
jewel, joule
knead, need
knew, new
knight, night
knows, nose
lea, lee
lead, led
leak, leek
lie, lye
mail, male
main, mane
manner, manor
marry, merry
meat, meet
medal, meddle
METER, METRE
miner, minor
morning, mourning
one, won
or, ore
pail, pale
pain, pane
pair, pare, pear
passed, past
peak, peek
pedal, peddle
piece, peace
plain, plane
pole, poll
pore, pour
pray, prey
profit, prophet
prince, prints
rabbet, rabbit
rain, reign
read, reed
rest, wrest
right, rite, write
role, roll
sail, sale
sane, seine
sea, see
seamen, semen
seaman's, siemens
sear, seer
sew, so, sow
serge, surge
shear, sheer
shone, shown
sight, site
sign, sine
sloe, slow
slay, sleigh
soar, sore
sole, soul
some, sum
son, sun
stair, stare
steal, steel s
straight, strait
tare, tear
tea, tee
team, teem
tear, teir
tender, tendor
theater, theatre
their, there
threw, through
timber, timbre
to, too, two
told, tolled
vain, vane, vein
vale, veil
vice, vise
waist, waste
waive, wave
ware, wear
wait, weight
way, weigh, whey
weak, week
we're, weir
weather, whether, wethe
whine, wine
whose, who's
wither, whither
yoke, yolk
your, you're

Letters

Litter vs. liter vs. litre

Perhaps readers of **Beverage Industry** would like to know some of the disadvantages of using the old American or German spelling "liter" for the metric unit, litre.

The spelling "liter" bears a close resemblance to "litter" with the only difference being a single consonant. Many persons have difficulty spelling words in which single or double consonants are a possibility. I am sure the accompanying advertisement from a page in the *Charleston News And Courier* is not the last we will see which uses the spelling "litter" for "liter". Even Barbara Walters on the March 25, 1975 "Today Show" pronounced "litre" as "litter," because she saw it spelled as "liter."

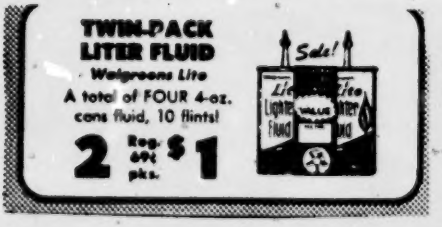
Certainly, companies in the beverage industry are sensitive about the word "litter." So why do they use a word for their product fills which bears a marked resemblance to "litter"? The likely reason must be that they were given a "hard sell job" by certain anglophobes from a "non advocative" metric council and the National Bureau of Standards.

Incidentally, "liter" is also widely used by some cigarette lighter companies, but they pronounce it with a long "i" sound which is phonetically more correct than "leeter".

The use of the spelling "litre" removes any resemblance to "litter," and it is certainly more sophisticated. I am surprised that advertising agencies serving the beverage companies does not bear this out.

The spelling "litre" has only one meaning in the U.S. and in any of the other 39 English speaking countries.

Louis F. Sokol
President,
U.S. Metric Assn., Inc.



19

D

National Bureau of Standards

METRIC SYSTEM OF WEIGHTS AND MEASURES

Guidelines for Use

Section 403 of Pub. L. 93-380 states the policy of the United States to encourage educational agencies and institutions to prepare students to use the metric system of measurement as part of the regular education program and authorizes the U.S. Commissioner of Education to carry out a program of grants and contracts to fulfill this policy. Subsection 403(a)(3) states, "For the purposes of this section, the term 'metric system of measurement' means the International System of Units as established by the General Conference of Weights and Measures in 1960 and interpreted or modified for the United States by the Secretary of Commerce." The National Bureau of Standards is responsible for "the custody, maintenance, and development of the national standards of measurement" (15 U.S.C. 272), and the Secretary has designated NBS to implement his responsibilities under subsection 403(a)(3). Pursuant to his authority under section 403, the U.S. Commissioner of Education has requested that NBS publish guidelines for use of the International System of Units, as interpreted and modified for the United States. Accordingly, and in implementation of the Secretary's responsibilities under subsection 403(a)(3), the following tables and associated materials set forth guidelines for use of the International System of Units (hereinafter "SI"), as interpreted and modified for the United States by NBS on behalf of the Secretary of Commerce.

The SI is constructed from seven base units for independent quantities plus two supplementary units for plane angle and solid angle, listed in Table 1.

TABLE 1

Quantity	Name	Symbol
SI BASE UNITS		
length	metre (meter)[1]	m
mass[2]	kilogram	kg
time	second	s
electric current	ampere	A
thermodynamic temperature[3]	kelvin	K
amount of substance	mole	mol
luminous intensity	candela	cd
SI SUPPLEMENTARY UNITS		
plane angle	radian	rad
solid angle	steradian	sr

[1] Both spellings are acceptable.
[2] "Weight" is the commonly used term for "mass."
[3] It is acceptable to use the Celsius temperature symbol (t) defined by $t = T - T_0$ where T is the thermodynamic temperature, expressed in kelvins, and $T_0 = 273.15$ K by definition. The unit "degree Celsius" is thus equal to the unit "kelvin" when expressing a temperature interval or a difference of temperature. Celsius temperature is expressed in degrees Celsius (symbol °C).

Units for all other quantities are derived from these nine units. In Table 2 are listed 17 SI derived units with special names which were derived from the base and supplementary units in a coherent manner, which means in brief, that they are expressed as products and ratios of the nine base and supplementary units without numerical factors.

TABLE 2.—*SI derived units with special names*

Quantity	SI unit			
	Name	Symbol	Expression in terms of other units	
frequency	hertz	Hz	s^{-1}	
force	newton	N	m kg/s²	
pressure, stress	pascal	Pa	N/m²	
energy, work, quantity of heat	joule	J	N·m	
power, radiant flux	watt	W	J/s	
quantity of electricity, electric charge	coulomb	C	A·s	
electric potential, potential difference, electromotive force	volt	V	W/A	
capacitance	farad	F	C/V	
electric resistance	ohm	Ω	V/A	
conductance	siemens	S	A/V	
magnetic flux	weber	Wb	V·s	
magnetic flux density	tesla	T	Wb/m²	
inductance	henry	H	Wb/A	
luminous flux	lumen	lm	cd·sr	
illuminance	lux	lx	lm/m²	
activity (radioactive)	becquerel	Bq	s^{-1}	
absorbed dose	gray	Gy	J/kg	

All other SI derived units, such as those in tables 3 and 4, are similarly derived in a coherent manner from the 26 base, supplementary, and special-name SI units.

TABLE 3.—*Examples of SI derived units, expressed in terms of base units*

Quantity	SI unit	Unit symbol
area	square metre	m²
volume	cubic metre	m³
speed, velocity	metre per second	m/s
acceleration	metre per second squared	m/s²
wave number	1 per metre	m^{-1}
density, mass density	kilogram per cubic metre	kg/m³
current density	ampere per square metre	A/m²
magnetic field strength	ampere per metre	A/m
concentration (of amount of substance)	mole per cubic metre	mol/m³
specific volume	cubic metre per kilogram	m³/kg
luminance	candela per square metre	cd/m²

TABLE 4.—*Examples of SI derived units expressed by means of special names*

Quantity	Name	Unit symbol
dynamic viscosity	pascal second	Pa·s
moment of force	metre newton	N·m
surface tension	newton per metre	N/m
heat flux density, irradiance	watt per square metre	W/m²
heat capacity, entropy	joule per kelvin	J/K
specific heat capacity, specific entropy	joule per kilogram kelvin	J/(kg K)
specific energy	joule per kilogram	J/kg
thermal conductivity	watt per metre kelvin	W/(m K)
energy density	joule per cubic metre	J/m³
electric field strength	volt per metre	V/m
electric charge density	coulomb per cubic metre	C/m³
electric flux density	coulomb per square metre	C/m²
permittivity	farad per metre	F/m
permeability	henry per metre	H/m
molar energy	joule per mole	J/mol
molar entropy, molar heat capacity	joule per mole kelvin	J/(mol K)

For use with the SI units there is a set of 16 prefixes (see table 5) to form multiples and submultiples of these units.

TABLE 5.—*SI prefixes*

Factor	Prefix	Symbol
10^{18}	exa	E
10^{15}	peta	P
10^{12}	tera	T
10^{9}	giga	G
10^{6}	mega	M
10^{3}	kilo	k
10^{2}	hecto	h
10^{1}	deka	da
10^{-1}	deci	d
10^{-2}	centi	c
10^{-3}	milli	m
10^{-6}	micro	μ
10^{-9}	nano	n
10^{-12}	pico	p
10^{-15}	femto	f
10^{-18}	atto	a

Certain units which are not part of the SI are used so widely that it is impractical to abandon them. The units that are accepted for continued use in the United States with the International System are listed in table 6.

TABLE 6.—*Units in use with the international system*

Name	Symbol	Value in SI unit
minute	min	1 min = 60 s
hour	h	1 h = 60 min = 3 600 s
day	d	1 d = 24 h = 86 400 s
degree	°	$1° = (\pi/180)$ rad
minute	′	$1' = (1/60)° = (\pi/10\,800)$ rad
second	″	$1'' = (1/60)' = (\pi/648\,000)$ rad
litre (liter)[1]	l	1 l = 1 dm³ = 10^{-3} m³
metric ton or tonne	t	1 t = 10^{3} kg

[1] Both spellings are acceptable.

In those cases where their usage is already well established, the use, for a limited time, of the following units is accepted, subject to future review.

nautical mile	hectare	gal[1]
knot	barn	curie
angstrom	bar	roentgen
standard atmosphere	are	rad

[1] Not gallon.

Metric units and their symbols other than those enumerated above are not part of the International System of Units. Accordingly, the following units and terms listed in the table of metric units in section 2 of the act of July 28, 1866, that legalized the metric system of weights and measures in the United States, are no longer accepted for use in the United States:

myriameter
stere
millier or tonneau
quintal
myriagram
kilo (for kilogram)

For more information regarding the International System of Units, contact the Metric Information Office, National Bureau of Standards, U.S. Department of Commerce, Washington, D.C. 20234.

Dated: June 1, 1975.

RICHARD W. ROBERTS,
Director.

[FR Doc.75-15798 Filed 6-8-75;8:45 am]

Note: The kilogram is the only SI unit with a prefix. Because double prefixes are not to be used, the prefixes of Table 5, in the case of mass, are to be used with gram and not with kilogram.

U. S. DEPARTMENT OF TRANSPORTATION

FEDERAL HIGHWAY ADMINISTRATION

SUBJECT	FHWA NOTICE
The Modern Metric (SI) System of Measurements--FHWA Usage of Metric Terms	N 5190.1 March 4, 1976

1. PURPOSE. To inform all Federal Highway Administration and State highway organizations that the spelling for the metric unit of length will be "metre" in all FHWA issuances.

2. BACKGROUND. The metric unit of length is spelled "metre" in virtually all foreign countries including the English-speaking countries which are now in the process of converting to the modern metric system. This spelling is also used in the authoritative E 380 Metric Practice Guide (a Guide to the Use of SI--the International System of Units), published by the American Society for Testing and Materials. In the United States the spelling "metre" has been adopted by many large industrial organizations, educational associations, publishers, professional and technical societies, and the National Conference on Weights and Measures. The FHWA Coordinating Task Force on Metrication agrees with proponents of the spelling "metre" for the unit of length, that the term "meter" should be used only for a measuring device such as water meter, speedometer, thermometer, voltmeter, etc.

3. ACTION. In the interest of uniformity, consistent with international usage and the decisions of major organizations in various sectors of the U.S. economy, the spelling of the SI unit of measurement for length will be "metre," and similarly "litre" for the unit of volume, in all FHWA correspondence, directives, publications, specifications, and reports. FHWA Order 1325.1, FHWA Correspondence Manual, will be revised in the near future to incorporate the provisions of this Notice.

L. P. Lamm
Executive Director

DISTRIBUTION: Headquarters
Regions
Divisions

OPI: HHO-30

F

An Open Letter

Metrication

Anton de S. Brasunas, Associate Dean
St. Louis Graduate Engineering Center
University of Missouri – Rolla

Sir:

In the May issue of the *Metric Bulletin* (Volume IV, Number 7), you stated in an open letter to "Valerie Antoine, Russell Hastings, Louis Sokol, Metric Editors, Educators and the U.S. Metric Community" that you did not intend to waste further time on the spelling issue of metre/meter, except to present three points you felt were logical. In addition, you urged all metricators to unite behind the spelling recommendations of the U.S. Department of Commerce. I would like to comment on the three points you made.

1. For an American to argue pronunciation versus spelling of the word (metre/meter) appears almost ludicrous. If we begin spelling words as they sound, we would have to forget words such as:

threw/through	faze/phase
profit/prophet	jewel/joule
sight/site	tonne/ton
sore/soar	to/too/two

among hundreds of other examples.

2. The word liter may not have any alternate meaning, but is a word spelled and defined years before a consortium of nations signed an agreement whereby all agreed to the adoption of the International System of Units (SI).

3. I have been deeply involved in measurement as it is related to utilities for the past 25 years, and a meter has always denoted an instrument of measurement, regardless of the product being metered (whether it be water, oil, electricity or natural gas). What logic can a person place using your "point of view" to the following:

Today we measured 1 cubic "meter" by means of a "meter", or

Today we measured 1 cubic "foot" by means of a "foot".

4. Mr. Brasunas, there are many companies in the United States which manufacture and sell products in the U.S. and abroad. But to do so under your suggestion would mean they must manufacture under two labels: meter/metre; liter/litre. I thought one of the major reasons behind metrication was to eliminate duplication in manufacturing which would enable U.S. products to become more easily exported to foreign countries.

You may feel that the spelling of metre and litre is of no significance, but I disagree with that position. I suggest if the United States can modify the spelling of an SI unit, all nations should have that prerogative. Suppose, for instance, Canada for whatever reason decided to modify the spelling of joule to jewel or England wanted to use ton rather than tonne. We would never achieve the goal of a worldwide *standard* system of measurement.

Therefore, in direct opposition to your proposal, I urge all metric educators, the Department of Commerce, the American National Metric Council, the American Gas Association and my fellows in the measurement profession *not* to modify the SI units meaning or *spelling* in any way. To do otherwise will defeat the purpose of metrication in the United States.

In closing, I do not believe we can get on with the "real" problems of SI metricating" the USA until we can agree with some 40 English speaking countries of the world not only on the definition of the units but the *spelling* of those units.

Respectfully,

James L. Hamlin, General Manager
Measurement and Gas Control
Cascade Natural Gas Corporation

Parochial Attitude

"As Chairman of the California Metric Committee, I have probably written or read as many thousands of words regarding the spelling of the base unit of length in SI as almost anyone in this country. However, instead of mellowing I become increasingly irked at the parochial attitude of people such as Anton deS. Brusunas in the May 1977 issue of the Metric Bulletin that there must be only one way of doing things.

"His three points are not original with him, they have been paraphrased by most vocal advocates of hot dogs, apple pie, chevrolet, and meter. In other words, they refuse to recognize that SI is a new system of units of measure and therefore requires special attention. The problem is not with phonetics, but with the concept of a rather novel idea that is accepted internationally with the exception of part, and I repeat part, of the United States.

"International trade and international standards are adhering more and more to the spelling metre for the unit of length in SI and meter for the indicating instruments. More and more nations are rquiring strict adherence to SI as set forth in International Standards.

"I will agree that PL 94-168 stipulates the use of SI as interpreted or modified by the U.S. Department of Commerce. Unfortunately, SI comes under the legal purview of the U.S. Department of State since it was formulated by an international organization established by an international treaty to which the United States was but one of the signatory nations. So the words 'as interpreted or modified by the U.S. Department of Commerce', had better be taken with a grain of salt.

"The meter spelling has the backing of the Assistant Secretary of Commerce for Science and Technology to whom the National Bureau of Standards reports. It is safe to say though that there is sharp, albeit unofficial, division within the NBS on how the word should be spelled. This holds equally true for many other Federal agencies because of international associations, accords, treaties, and contracts.

"I would like to take particular exception to deS. Brasunas item (3). The answer is yes, we have confused the item and length unit when we write or say 'foot', or 'yard' and this is considerably less than 200 years. He wisely did not include the 'mile' in his list. Confusion exists between the pre-1959 yard and the post-1959 yard in many people's minds. Confusion exists between the pre-1959 nautical mile and the post-1959 nautical mile, not to mention the statute mile and the survey mile.

"I agree with Mr. deS. Brasunas when he says that we should get on with 'SI metricating', but let's not do it in a way that would prove a hindrance in both time and money by 'requiring' a single spelling of the SI unit of length.

"In conclusion, let me say that I shall continue to advocate and use the proper SI symbology as proclaimed by the International Bureau of Weights and Measures in its official reports of the decisions of the International Committee for Weights and Measures that have been ratified by the General Conference on Weights and Measures. I shall continue to advocate and use the internationally accepted English spelling of the units of the SI. I can tell the people what the dimensions of square metre are, but I am not so sure what the dimensions of a square meter are until I actually measure the instrument.

J. L. Wilson, Chairman, California Metric Committee, Livermore, California

(reprinted from METRIC BULLETIN, August 1977, 4(10):12-13. J. J. Keller & Associates, Neenah, Wisconsin)

OHAUS Ohaus Scale Corporation/29 Hanover Road/Florham Park, New Jersey 07932/Phone: 201/377-9000 • Cable: Ohscale, U.S.
Telex: 710-986-8507

Mrs. Juanita Kreps
Secretary of Commerce
U. S. Department of Commerce
14th Street between Constitution Ave.
& E Street, N. W.
Washington, D. C. 20230

April 28, 1977

Dear Madam Secretary:

We are manufacturers of metric measuring instruments which are marketed throughout the world to the educational community. We along with everyone else involved in international trade of measurement sensitive devices find it absolutely essential to have uniformity worldwide in the usage of the International System of Units. Our purpose in writing to you is to ask for your assistance in resolving problems which we are now experiencing in two areas:

1) The use of the capital "L" as the symbol for litre.

2) The ambiguity in the spelling of the word "litre" and "metre".

In each of these two cases recommendations of the Department of Commerce deviate from international standard practice. This places us in an impossible position. If we continue to label our products according to the international standards, educators in the U. S. will not purchase because they are not in accord with U.S. recommendations. If we change to the Department of Commerce recommendations, we lose business in the world market for the same reason. To attempt to produce two separately marked products is impractical and expensive.

The most pressing problem is the symbol for litre. The international standard calls for the lower case "l" as the litre symbol, a practice being followed throughout the rest of the world. We recommend:

1) That the U. S. interpretation of SI units remain with the present world standard, i.e. the lower case "l" as preferred usage and that the upper case "L" be permitted as optional usage.

2) Before adoption of an upper case "L" that steps be taken to bring a resolution before the General Conference on Weights and Measures at its next meeting in 1979 to concur with such usage.

3) Only after adoption of the change to the International System of Units by the General Conference on Weights and Measures should the Department of Commerce recommend the use of this symbol in the United States.

This course of action will require a correction to the interpretation published by the Department of Commerce in the Federal Register dated December 10, 1976 which declares "not acceptable for continued use in the U. S." any symbol other than the capital "L" for litre.

Our second problem involves spelling. The present ambiguity in the "er" or "re" spelling of litre and metre is often erroneously considered to be a mute point with no real significance. Certainly within the educational communities of the world, the matter of spelling has great significance. Educators will refuse to purchase materials, either printed textbooks or measuring equipment, if the spelling does not agree with the "accepted" spelling in that country. It is, therefore, essential, certainly among English speaking countries, and preferably with all countries that uniform international spelling be adopted.

Since the accepted standard in Canada and all other English speaking countries is the "re" spelling of metre and litre, we urge that steps be taken to establish this as recommended spelling in the United States. Under the Metric Conversion Act of 1975, the Department of Commerce is charged with the responsibility for interpreting the International System of Units for use within the United States. We therefore ask that steps be taken to present this matter before the appropriate persons in the Department of Commerce for action at the earliest opportunity.

We sincerely believe that points raised here and our request for action to implement them is in the best interests of everyone in the United States, and most particularly those companies involved in international trade where measurement sensitive devices are involved. We hope we may look forward to your support of our recommendations.

Very truly yours,
OHAUS SCALE CORPORATION

21

William C. Ohaus
Executive Vice President

WCO/es

I

R BEFORE E EXCEPT AFTER....

Do you go to the theatre? Or do you prefer the theater? A moot point, for sure. It does not matter once you get inside for the show.

Unfortunately it is not so simple when it comes to standardizing units of measurement. There's been a lot of discussion concerning the spellings of metre and litre, and you can be certain that there will a lot more before SI becomes universal. Such groups as SAE, ASTM, ASHRAE, AWS, AND FHWA, and industry leaders as GM, have adopted the "-re" spelling. On the other hand, ANMC, the U.S. industry-based metric committee, as well as ANSI and other technical organizations, chose the Americanized "-er" version. It's obvious that organizations and corporations will continue to line up on both sides.

Here at Kenworth we'll be using the more widely accepted (worldwide) "-re" spelling. We made this decision based on two major factors: 1) The U.S., and American public in general, would be ill-advised in trying to make SI something "American." The system was developed in Europe, has been used extensively in European countries, and its rules for usage and presentation are firmly established. The rest of the world will be using the European rules, and it would be inappropriate to adopt the system and then change it to suit our fancy; 2) To avoid ambiguity, the "re" spelling is preferred for the unit of measure (metre), and the "-er" version is preferred for the measuring devices (water meter, micrometer). These reasons should be sufficient. But for those people who still feel that the "-er" spelling is better, there's another, economic reason.

European common-market countries will not accept any product or document that does not conform to the standards of presentation of SI. If we insisted on an "-er" spelling, or any other deviation from standard SI, it would mean we'd have to duplicate specifications, drawings, owners' manuals, and any other technical documents that accompany our trucks. We would, in affect, have American standards and foreign-market standards. That would certainly be an unfortunate waste of work-hours and resources.

The decisions of the Kenworth Metric Board may seem arbitrary at times. You can be assured that any standards that are adopted at Kenworth are required to ensure us a place in the foreign markets. In addition, SI has been adopted by all but three of the countries in the world. To maintain commonality, which is the main reason for converting to SI, it is best to adopt the entire system, and not try to change rules of usage to suit past practice or fancy.

(reprinted from KENMETRIC, the Kenworth Metric Newsletter, Issue 3, 1978. Kenworth Truck Company, Seattle, Washington)

NATIONAL SOCIETY OF PROFESSIONAL ENGINEERS: RESOLUTION 78-2, METRIC SYSTEM SUPPORT. Passed by NSPE Board of Directors, 1978 July 21.

WHEREAS, The metric system of measurement offers an accurate, logical approach to measurement; and

WHEREAS, The United States is the only major country that is not presently on the metric system or formally engaged in converting to the metric system; and

WHEREAS, The United States is economically being hurt in foreign trade by not being on the metric system; and

WHEREAS, Other countries presently using, or now adopting the metric system, are trying to standardize the unit system within the metric system as the SI version of the metric system; and

WHEREAS, The NSPE has recognized the importance of conversion to the SI version of the metric system through Professional Policy No. 102-B: and

WHEREAS, The Department of Commerce is resisting total conformance with the international standards of SI symbols, promulgated by the International Bureau of Weights and Measures, and with the spelling standards adopted by the 40 plus English speaking countries of the world; and

WHEREAS, Certain government publications resist making the proper distinction between "weight" and "mass", and certain engineering groups are resisting the designation of stress and pressure in proper SI units;

NOW, THEREFORE, BE IT RESOLVED, That NSPE further support the United States conversion to the SI version of the metric system in its totality, conforming to the standards of the International Bureau of Weights and Measures, and in the matter of spelling to the standards of the English speaking countries of the world.

AND BE IT FURTHER RESOLVED, That PP No. 102-4-Metric System-Conversion to, be revised by leaving the first paragraph unchanged, adding a second paragraph, and leaving the last paragraph unchanged so the revised policy would read as follows:

The National Society of Professional Engineers, recognizing the advantages inherent in use of the metric system of measurement, endorses the principles embodied in the Metric Conversion Act of 1975.

In implementing the Act, NSPE supports full conformance with the SI metric standards of the International Bureau of Weights and Measures and in the matter of spelling with the standards of the 40 plus English speaking countries of the world.

NSPE urges its members, chapters, and state societies to provide any assistance it can to further the rapid conversion to the metric system within the United States.

Background Information for Resolution 78-2

The United States Congress passed the Metric Conversion Act of 1975 (referenced in NSPE Professional Policy No. 102-B containing phraseology that left details of implementation to the Secretary of Commerce. For political reasons, the Secretary of Commerce has chosen not to conform completely with the international standards adopted by every other country agreeing to go along with SI metric, nor to conform to spelling standards of the 40 plus other English speaking countries of the world. The deviations are not great (metre vs. meter, litre vs. liter, etc.) but they are troublesome because many publishers are holding back on publishing books in "American" metric units because they fear the books cannot be sold on the international English speaking market unless they conform to the international standards. Further, some engineering groups are holding out for measuring stress and pressure in kilograms force per square centimetre, etc., instead of in the proper SI metric terms of pascals (newtons per square metre). This resolution expresses the view that FOR ALL OF THESE REASONS the United States should recognize the importance of conforming to international standards and recognize the authority of the International Bureau of Weights and Measures (in Paris) and that of the 40 plus of English speaking nations in setting the standards, to be used in the United States.

SPELLING USAGE BY COUNTRIES (figures in millions)

metre - litre

ENGLISH

Australia	13.7	Pakistan (20%)	14.0
Bahamas	0.2	Panama	1.7
Belize	0.15	Papua-New Guinea	2.8
Brunei	0.16	Rhodesia	6.5
Bangladesh (20%)	16.0	Seychelles	0.06
Barbados	0.2	Sierra Leone	2.8
Botswana	0.7	Singapore	2.3
Burma (20%)	6.0	South Africa	10.0
Gambia	0.5	Sri Lanka (30%)	4.3
Ghana	10.0	Sudan (20%)	4.0
Grenado	0.1	Swaziland	0.5
Guyana	0.8	Tanzania	15.0
Canada	15.0	Transkei	1.7
Fiji	0.6	Trinidad & Tobago	1.0
India (20%)	120.0	Uganda	12.0
Ireland	3.2	United Kindom	56.0
Jamaica	2.1	UK dependencies	5.1
Kenya	13.5	Western Samoa	0.6
Lesotho	1.0	Zambia	5.0
Malawi	5.1		
Malta	0.3	total	425.1
Mauritius	0.9		
Maylasia (20%)	2.4		
New Zealand	3.1		
Nigeria	64.0		

FRENCH

Algeria (30%)	5.0	Niger	4.7
Belgium	4.0	Rwanda	4.0
Benin	3.2	Switzerland	1.2
Burundi	3.0	Tunisia (30%)	2.0
Cameroon	6.5	Upper Volta	6.1
Canada	6.0	Zaire	25.7
Central African Republic	2.6	total	167.3
Chad	4.0		
Comoro Islands	0.3		
Congo Peoples Republic	1.4	**TURKISH**	
Equitorial Guinea	0.3	Turkey	40.0
France	53.3		
Fench dependencies	2.7	total	207.3
Gabon	0.5		
Haiti	4.6		
Ivory Coast	5.0		
Madagascar	8.0		
Mali	5.8		
Mauritania (30%)	0.4		
Morocco (30%)	5.0		

metro - litro

SPANISH, 17 countries	234.0
PORTUGUESE, 6 countries	133.0
ITALIAN, Italy	56.2
total	423.2

metr - litr (Slavic)

Bulgaria	9.0
Czechoslovakia	15.0
Poland	34.3
U.S.S.R.	257.0
total	327.8

meter - liter

Austria (GERMAN)	7.5	Netherlands (DUTCH)	13.7
Belgium (FLEMISH)	6.0	Surinam (DUTCH)	0.4
German D.R. (GERMAN)	16.8	Norway (NORWEGIAN)	4.0
German F.R. (GERMAN)	61.8	Luxemburg	0.3
Denmark (DANISH)	5.0	South Africa (AFRIKAANS)	7.0
Iceland (Danish)	0.1	Sweden (SWEDISH)	8.2
Hungary (HUNGARIAN)	10.6	Switzerland (GERMAN)	4.2
Indonesia (DUTCH 15%)	20.0	total	165.8

SUMMARY

SPELLING	LANGUAGE GROUP	NUMBER OF LANGUAGES	NUMBER OF COUNTRIES	POPULATION (millions)
"-tr" group				
metre-litre	English	1	44	425
	French	1	26	167
	Turkish	1	1	40
metro-litro	Romance	3	24	423
metr-litr	Slavic	7	4	328
			total	1383
"t-vowel" group				
meter-liter		8	15 total	166

SPELLING OF "METRE" AND "LITRE"

The traditional United States spelling for the units of length and volume in the metric system have been "meter" and "liter" respectively. At the conclusion of the 14th General Conference of Weights and Measures in 1971, the National Bureau of Standards in the United States and Her Majesty's Stationery Office in the United Kingdom translated the official French document recording the decisions of all General Conferences on Weights and Measures, including those taken at the 1971 meeting. This document, entitled "The International System of Units (SI)", is published by the National Bureau of Standards in the United States and is identified as NBS Special Publication 330.

In making the translation, the British and American editors used the spelling "metre" for the unit of length and "litre" for the unit of volume, noting that by using these spellings in the English translation they hoped to secure worldwide uniformity in the English spelling of the names of these units in the International System. Since then, the SAE, the ASME, and the ASTM have adopted the "metre" and "litre" spellings in their metric practice guides. The "metre" and "litre" spelling is also used in ISO S1000, which is published and distributed by the American National Standards Institute.

Accordingly, the preferred spelling in the United States for these two units of measure is "metre" and "litre", and this spelling is recommended for use by General Motors.

R. P. Trowbridge
April 17, 1973

BIPM Comments on Spelling of METRE-LITRE

Following are English translations of two letters from Dr. Jean Terrien, director, International Bureau of Weights and Measures, Pavillon de Bretuil, Sevres, France.

5 January 1976

Thank you for your letter of 2 December 1975 on the subject of the "American" spelling of the words metre and litre.

As you know, the International Committee and the General Conference of Weights and Measures have neither the power nor the desire to issue rules on the spelling of names of units in different languages. We only try to promote international uniformity, although we know very well that there will always be unavoidable differences. Thus, for example, the Spanish law of 1967 uses "metro", "litre', "voltio"(volt), "vatio" (watt), "julio" (joule), etc.

As for the United States, we have noted in a report of 1832 (22nd Congress, ist session, H.R. Doc. No. 299) the spelling "metre' and "litre", but in the American law of 1866 "meter" and "liter" are used. In the English law of 1864 on the other hand, "metre" and "litre" are used; this is also the spelling adopted in South Africa, in Australia, in Canada, and in the other English language countries.

The official language of our organization is French; our publications. reports, etc. are thus written in that language. For certain documents which we publish in English, we use the English spelling "metre" and "litre."

In summary, the BIPM wishes that in all English language countries uniformity should be achieved on the ending "-re", and we, therefore, approve the position adopted by your Association. Please accept my best wishes.

---

18 August 1977

Replying to your letter of 3 August 1977, we can only refer to our letter of 5 January 1976.

We regret the argument which has been established in the U.S. on the subject of the spellings "metre, litre" and "meter, liter". We would obviously have wished that the spelling "metre,litre" as appears in the preceding editions of NBS SP330 be supported and finally adopted in all English speaking countries.

Concerning the translation by NBS of our brochure on SI, the BIPM only made sure that the American text "agrees with the intention and the letter of the original." We have not declared ourselves for or against the spellings "meter, liter", a problem which arises only in the U.S.

If the BIPM had published an English edition under its own responsibility, it would have used the spellings "metre, litre". We consider it therefore desirable that in the new edition of SP330 one should point out in the "foreword" that contrary to general custom in English, "meter, liter" is the spelling adopted by the official American department.

Please accept my best greetings.

Editorial note:

The U.S. Department of Commerce has completely ignored Dr. Terrien's recommendation that the 1977 "Americanized" version of NBS SP 330 contain a statement in the foreword "that contrary to general custom in English, 'meter, liter' is the spelling adopted by the official American department." The 1977 edition of NBS SP 330 makes no mention whatsoever that the spelling, metre-litre, was used in the three previous editions of that publication and that it is used officially by all other English speaking nations.

INTERSTATE CONSORTIUM ON METRIC EDUCATION

Recommendation on spelling

The Interstate Consortium on Metric Education (ICME) consisted of 28 states and territories which met in 1974 for the purpose of planning how the nation's educational institutions can best prepare Americans to understand and use metrics. The ICME was conducted with the support of the United States government through the Elementary and Secondary Education Act, Title V.

The states and territories selected for participation in the ICME were those that have centralized curriculum adoption. The chief educational officers of the participating states and territories chose as their ICME representatives those persons who had the primary responsibilities for developing metric programs for the schools in their states. Thereby, the composition of the ICME membership will maximize the impact of the ICME on the future development of metric instructional materials.

As a result of much thought and discussion the Final Report of the ICME presented 23 recommendations on the subject of efficient transition to the SI. The following recommendation concerns itself with the spelling of metre-litre:

Recommendation 2

The ICME recommends that for matters concerning definition of units, style, and spelling that the International System of Units (SI), as stated in the U.S. Department of Commerce publication NBS 330 and the American Society for Testing and Materials publication E 380-72, be used in the preparation of instructional materials.

Rationale. To provide a sound and accurate basis for the content of metric education, a reliable source of technical information must be identified and utilized. Such a source is the National Bureau of Standards Special Publication 330 *The International System of Units (SI)*. NBS 330 is an approved English language translation of the report entitled *Le Système International d'Unités*, which was originally issued by the International Bureau of Weights and Measures established under the provisions of the Treaty of the Metre in 1875 to which the United States was a signatory.

To be consistent in matters of style, spelling, and definition of units in instructional materials, the ICME reviewed *Metric Practice Guide*, publication E 380-72 of the American Society for Testing and Materials (ASTM), and found it acceptable for these purposes.

The ICME recognizes that at least two exceptions are commonly made to the practices in the suggested guides; namely, spelling of the unit of length and the use of the word *weight* to designate both mass and force.

Although there has been no national consensus on the spelling of the base unit of length, the ICME prefers the spelling *metre*. Additionally, the preferred spelling for the unit of capacity is *litre*.

In common practice, the word *weight* means either mass or force. The ICME prefers that the word *weight* and its derivatives (weigh, weighing, and so forth) be avoided in instructional programs. Units of mass, such as the kilogram, should be used whenever mass is intended; units of force, such as the newton, should be used whenever force is intended (refer to pages 17 through 19 for a more complete explanation of *weight-mass*).

FMC Corporation

Industrial Chemical Division
2000 Market Street
Philadelphia Pennsylvania 19103
(215) 299 6000

June 14, 1978

Louis F. Sokol
U. S. Metric Association
Sugarloaf Star Route
Boulder CO 80302

Dear Dr. Sokol:

I read your Association Newsletter with great interest, especially the letters concerning re vs er spelling. I have fought a losing battle in FMC against er spelling. There are good reasons for re but none for er.

The attachments should be of interest to you. Use any part of the material for your Newsletter, if you wish to do so.

Sincerely,

Richard H. Braunlich
Metric Coordinator
for Chemical Operations

P

Quotation below from "Mendenhall Order" of 1893 which used the *metre* spelling throughout. (Copied from *Weights & Measures Standards of the United States, A Brief History*, NBS SP 447)

> for exclusive use. The practical effect upon our customary weights and measures is, of course, nothing. The most careful study of the relation of the yard and the metre has failed thus far to show that the relation as defined by Congress in the act of 1866 is in error.

Q

The following quotations are from *IMPROVING THE DISSEMINATION OF SCIENTIFIC AND TECHNICAL INFORMATION, A Practitioner's Guide to Innovation*, page I.2.8.1., published 1978-10-31 by the Capital Systems Group for the National Science Foundation under contract:

"In the remainder of this article, we will confine ourselves to pointing out the main differences between SI and the obsolete versions of the metric system, to help eliminate some problems and controversy regarding the proper usage of SI.

"Although the points we cover here may seem a bit trivial to some readers, deviation from SI conventions in using metric units and symbols can have a major impact in particular circumstances. For example, U.S. publishers are finding it necessary to produce separate editions of certain books destined for Canada and other English-speaking countries, because the 'er' spelling of metre and litre used by some U.S. groups is not acceptable in those markets. Although all other English speaking countries have conformed to use of the internationally recommended metre/litre spelling, some U.S. groups insist upon meter/liter. This poses a problem for U.S. publishers and increases publishing costs, because two versions of the same text must be published -- one for domestic use and one for export."

R

Copies of *STATEMENT ON SPELLING OF METRE* are available from USMA at the following prices:

1 - 9 copies	$1.00 each
10 or more copies	$0.50 each

OTHER U.S. METRIC ASSOCIATION PUBLICATIONS

METRIC UNITS OF MEASURE & STYLE GUIDE	1 - 9 copies	$1.00 each
	10 - 99 copies	$0.50 each
	100 or more copies	$0.45 each
METRIC HANDBOOK FOR HOSPITALS	1 - 9 copies	$1.00 each
	10 - 99 copies	$0.50 each
	100 or more copies	$0.45 each
Fact Sheet: *ANSWERS TO A FEW QUESTIONS YOU MAY HAVE ABOUT U.S. METRIC CONVERSION*		$0.50 each
200 mm White Plastic Ruler	Package of 10	$2.50
	Package of 100	$16.50
GO METRIC Bumper Sticker	Package of 10	$1.75
	Package of 100	$13.00
Celsius Thermometer (-30 °C to 50 °C)	Package of 10	$6.00
	Package of 100	$45.00

INFORMATION ON THE U.S. METRIC ASSOCIATION

The U.S. Metric Association (USMA) is a national, nonprofit organization founded in 1916 to promote the use of the metric system of measurement in United States schools, commerce, and industry. USMA publishes the quarterly U.S. METRIC ASSOCIATION NEWSLETTER with information on metrication developments in the United States and other countries. It also issues publications on the correct use of the International System of Units (SI). USMA is an affiliate of the American Association for the Advancement of Science (AAAS).

Activities of USMA include operation of the national headquarters office and coordination of geographical regions to unite the efforts of members and company and organization groups interested in promoting use of the new measurement language.

All persons and organizations interested in metric promotion and implementation are invited to join the U.S. Metric Association and participate in its activities. For membership information, write:

U.S. METRIC ASSOCIATION, Inc.
Sugarloaf Star Route
Boulder, Colorado 80302
(303) 442-3342

This page is standard international paper size, ISO A5, 148 x 210 mm

think metric go metric